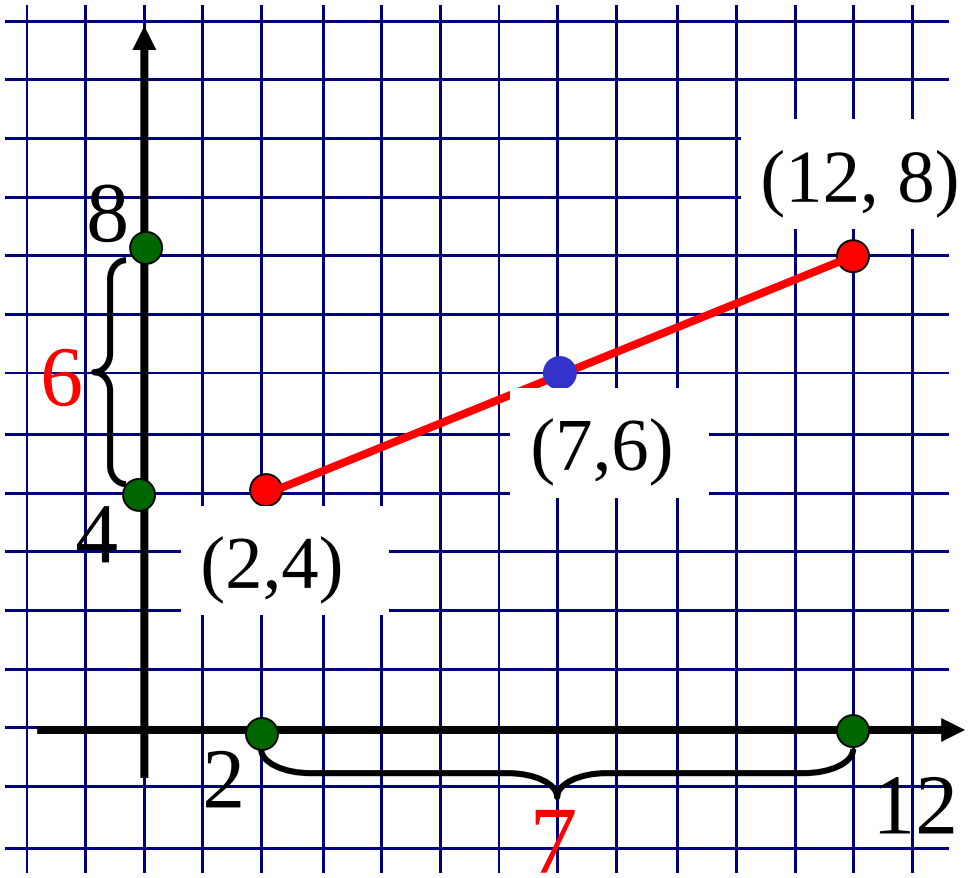
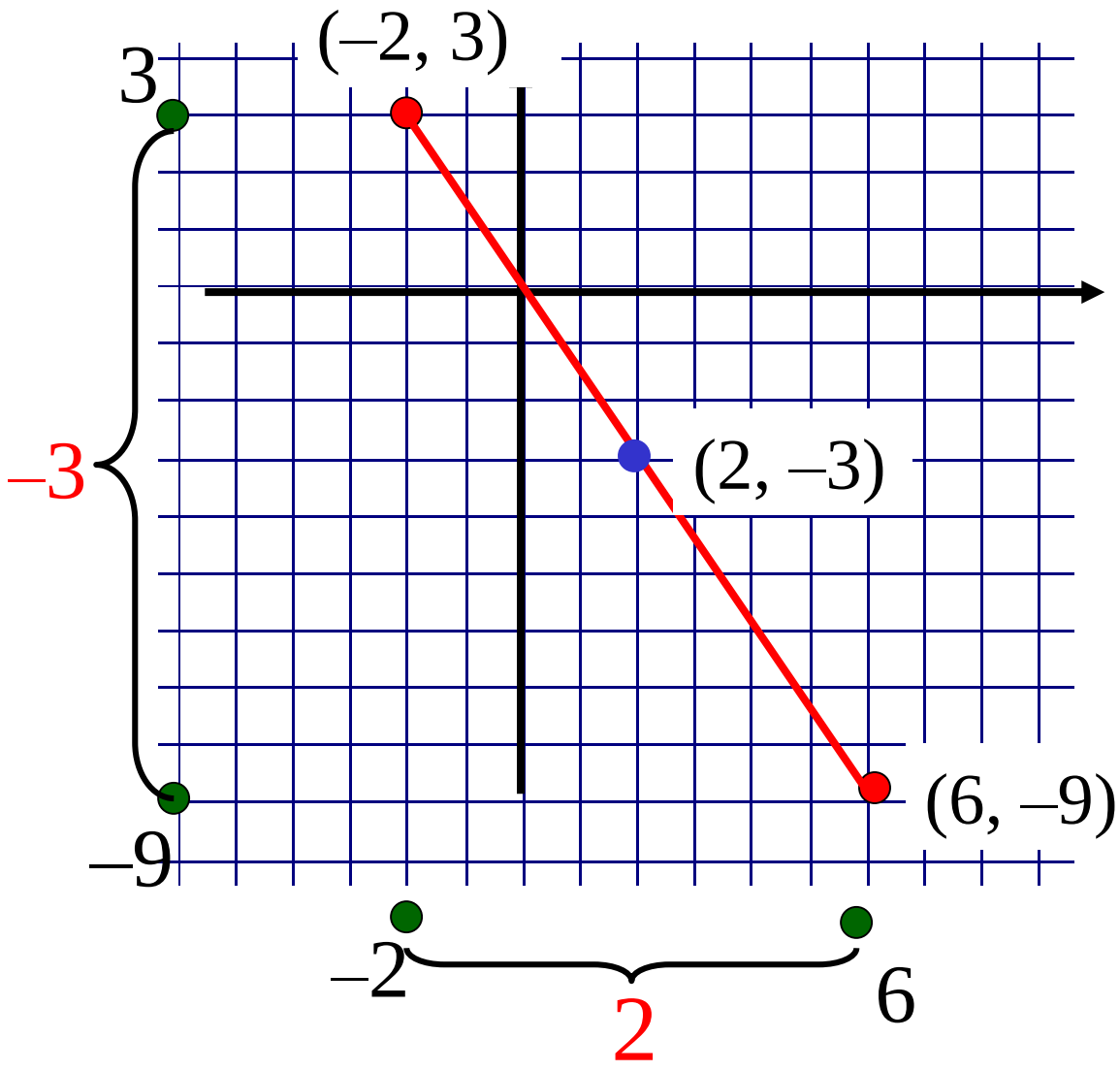
2.7 Determining the Midpoint of a Line Segment

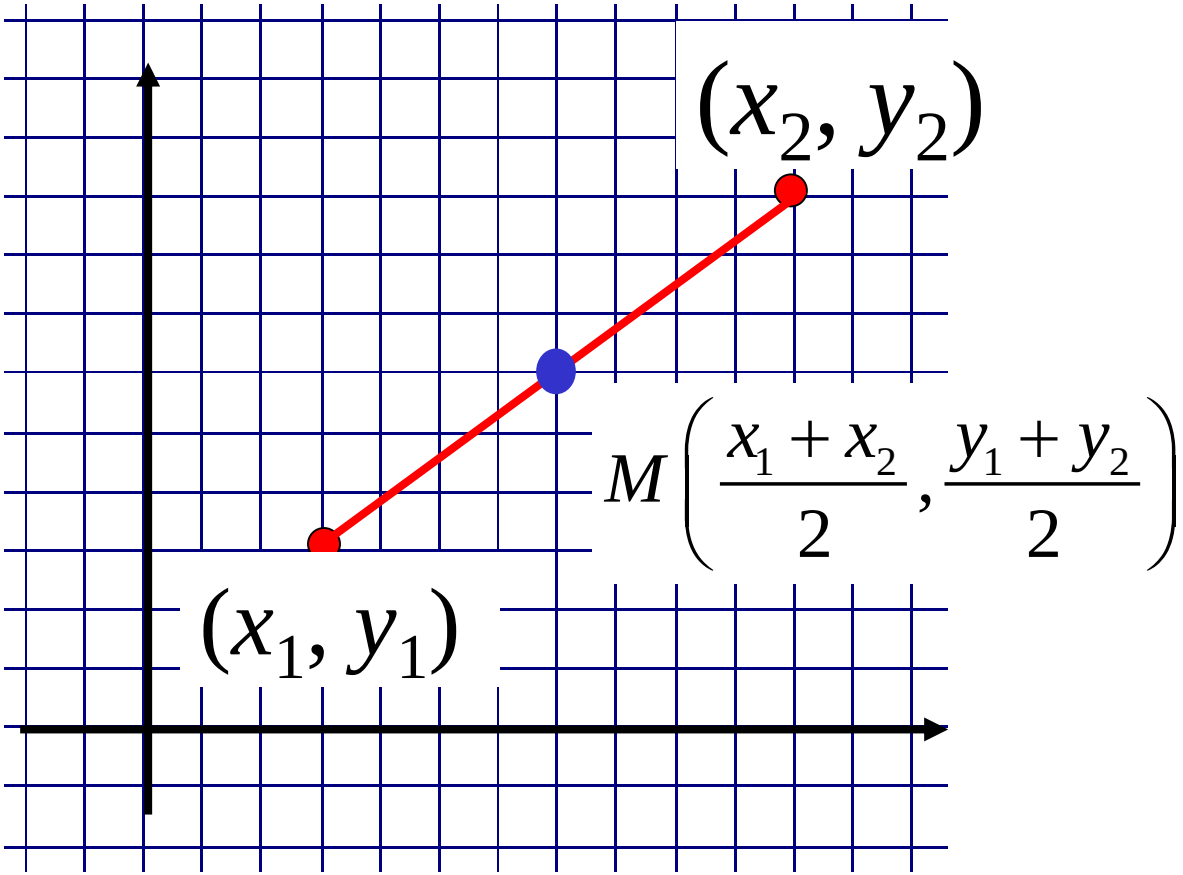
Find the midpoint between the points (2, 4) and (12, 8)



Find the midpoint between the points (–2, 3) and (6, –9)



Find the midpoint between the points (x_1, y_1) and (x_2, y_2)



Determine the midpoint between the points (–9, 4) and (1, 14)

(x_1, y_1) (x_2, y_2)

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$M = \left(\frac{-9 + 1}{2}, \frac{4 + 14}{2} \right)$$

$$M = \left(\frac{-8}{2}, \frac{18}{2} \right)$$

$$\boxed{M = (-4, 9)}$$

The coordinates of a rectangle are $A(0, 8)$, $B(9, 10)$, $C(11, 2)$, $D(2, 0)$. Determine if the midpoints of the diagonals are the same.

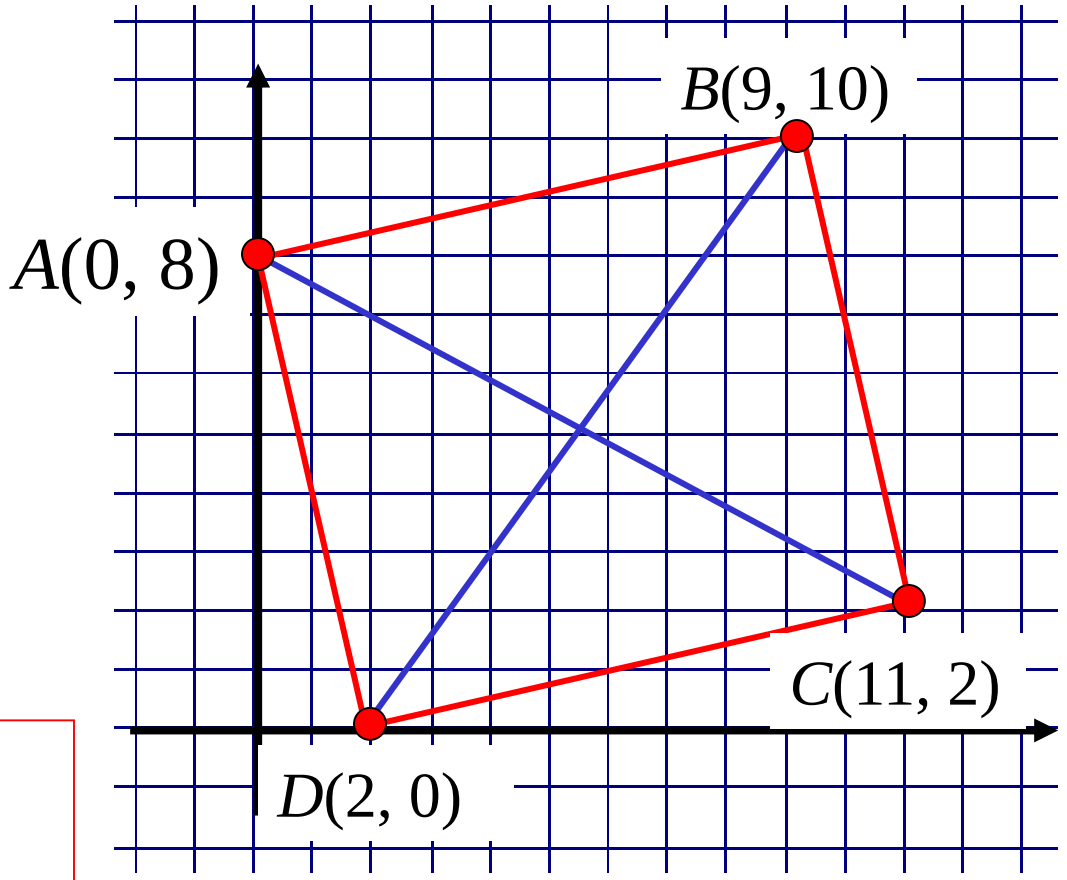
$$M_{AC} = \left(\frac{0+11}{2}, \frac{8+2}{2}\right)$$

$$M_{AC} = (5.5, 5)$$

$$M_{DB} = \left(\frac{2+9}{2}, \frac{0+10}{2}\right)$$

$$M_{DB} = (5.5, 5)$$

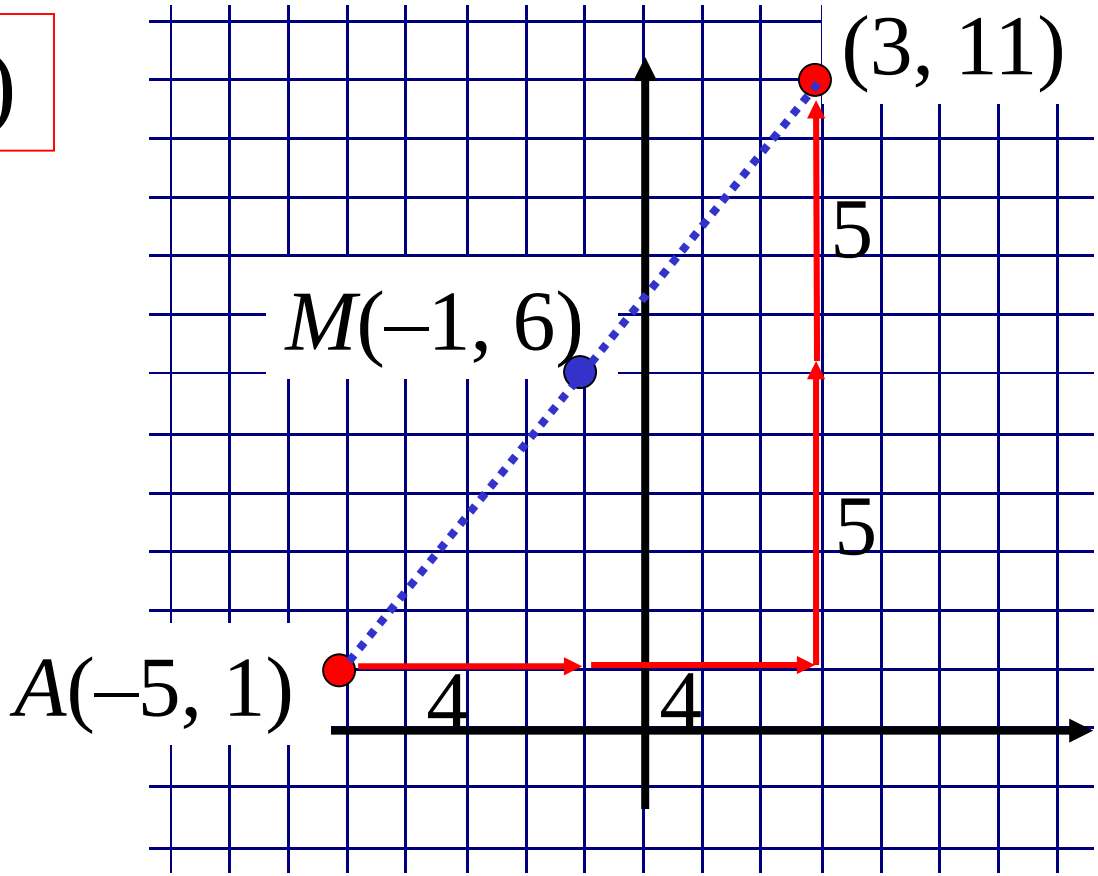
$\therefore$ The midpoints of the diagonals are the same.



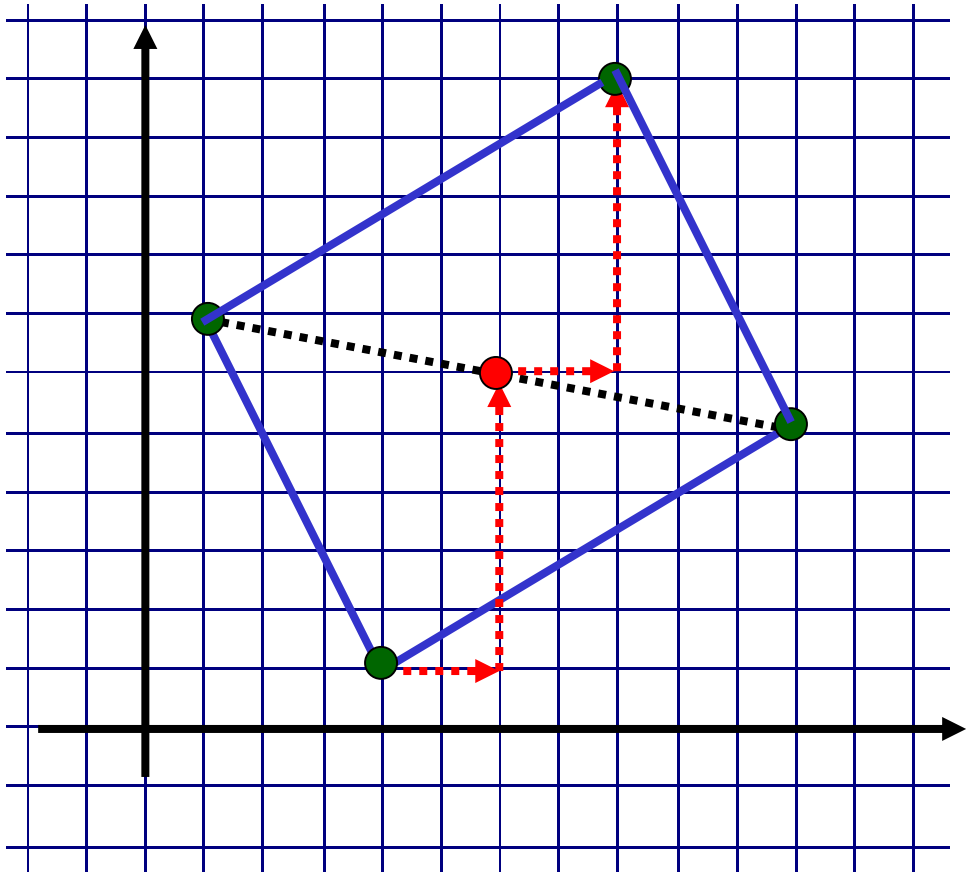
If one end of a line segment AB is $A(-5, 1)$ and the midpoint of the line segment is $M(-1, 6)$, determine the coordinates of point B.

$B(3, 11)$

Can you solve this using the midpoint formula?

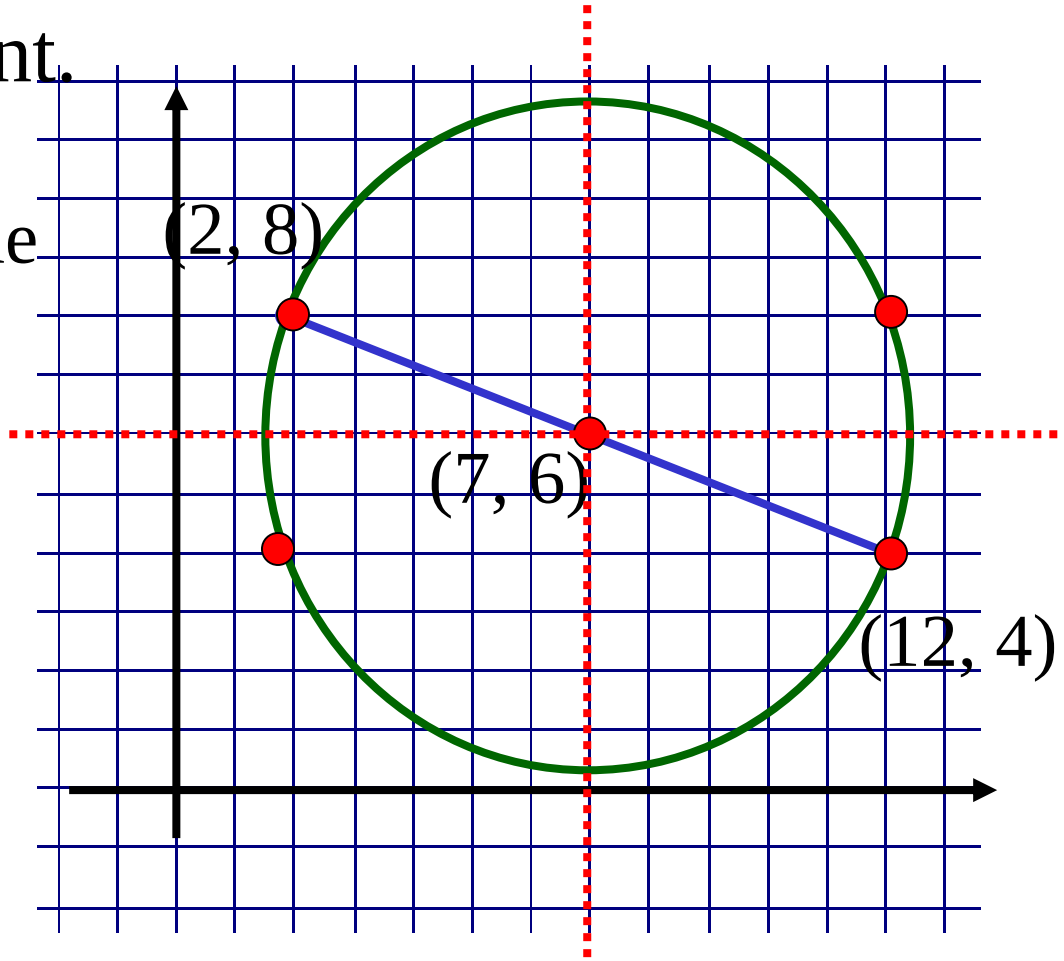


Use midpoint to determine the fourth vertex of the rectangle.



The endpoint of the diameter of a circle are (2, 8) and the center is (7, 6)

Find the other endpoint.



How would you determine the length of the radius?

Ans:

Use the distance formula

Determine another point on the circle.